

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (previously presented): A method for reducing the amount of particles and residues in photomasks comprising:

providing a photomask having patterned metal layers;

treating the photomask with a cleaning process comprising:

contacting the photomask with a solution comprising ammonium hydroxide, hydrogen peroxide and water maintained at a constant temperature;

agitating the solution by using ultrasonic; and

exposing the photomask to the solution;

removing particles and residue greater than about 0.2 microns while removing a minimal amount of patterned metal layers, wherein the removing of particles and residue is assisted by etching of the metal underneath said particles and residue; and

exercising the cleaning process on a particular photomask for a multiple number of cleaning cycles without degradation of the photomask,

wherein the ratio of ammonium hydroxide:hydrogen peroxide:water of the cleaning solution is from about 1:1:200 to about 1:1:20 respectively by volume, the number of multiple cleaning cycles exercised on a particular photomask without degradation is greater than ten cleaning cycles, and the solution has a pH greater than 8 and less than 9.5.

Claim 2 (cancelled)

Claim 3 (previously presented): The method of Claim 1 wherein the minimal amount of metal layer or layers removed during cleaning results in less than a 6.3% increase in optical transmission.

Claim 4 (previously presented): The method of Claim 1 wherein the constant temperature range of the solution is from about 15 degrees centigrade to about 60 degrees centigrade.

Claim 5 (cancelled).

Claim 6 (cancelled)

Claim 7 (previously presented): A method for attenuating yield loss in fabrication of microelectronics fabrications employing phase shift photomasks by reducing the amount of particles and residues in said photomasks comprising:

providing a phase shift photomask having patterned metal layers;

treating the phase shift photomask with a cleaning process comprising:

contacting the photomask with a solution comprising ammonium hydroxide, hydrogen peroxide and water maintained at a constant temperature;

agitating the solution by using ultrasonic; and

exposing the photomask to the solution;

removing particles and residue greater than about 0.2 microns while removing a minimal amount of patterned metal layers, wherein the removing of particles and residue is assisted by etching of the metal underneath said particles and residue; and

exercising the cleaning process on a particular phase shift photomask for a multiple number of cleaning cycles without degradation of the phase shift photomask,

wherein the ratio of ammonium hydroxide:hydrogen peroxide:water in the solution ranges from about 1:1:200 to about 1:1:20 by volume respectively, the number of multiple cleaning cycles exercised on a particular photomask without degradation is greater than ten cleaning cycles, and the solution has a pH greater than 8 and less than 9.5.

Claim 8 (original): The method of claim 7 wherein the phase shift mask is formed of patterned layers of chromium and molybdenum silicon alloy.

Claim 9 (cancelled)

Claim 10 (previously presented): The method of Claim 7 whereby the minimal amount of metal layers removed by the cleaning process is equivalent to less than a 6.3% increase in optical transmittance.

Claim 11 (previously presented): The method of Claim 7 wherein the constant temperature range of the solution is from about 15 degrees centigrade to about 60 degrees centigrade.

Claim 12 (cancelled)

Claim 13 (cancelled)

Claim 14 (previously presented): The method of claim 1, wherein the photomask includes a transparent substrate.

Claim 15 (previously presented): The method of claim 1, wherein the photomask includes a fused quartz substrate.

Claim 16 (previously presented): The method of claim 7, wherein the photomask includes a transparent substrate.

Claim 17 (previously presented): The method of claim 7, wherein the photomask includes a fused quartz substrate.

Claim 18 (new): A method for reducing the amount of particles and residues in photomasks comprising:

providing a photomask having patterned metal layers;

treating the photomask with a cleaning process comprising:

contacting the photomask with a solution comprising ammonium hydroxide, hydrogen peroxide and water maintained at a constant temperature;

agitating the solution by using ultrasonic; and

exposing the photomask to the solution;

removing particles and residue greater than about 0.2 microns while removing a minimal amount of patterned metal layers, wherein the removing of particles and residue is assisted by etching of the metal underneath said particles and residue; and

exercising the cleaning process on a particular photomask for a multiple number of cleaning cycles without degradation of the photomask,

wherein the solution has a pH greater than 8 and less than 9.5.

Claim 19 (new): The method of Claim 18, wherein the minimal amount of metal layer or layers removed during cleaning results in less than a 6.3% increase in optical transmission.

Claim 20 (new): The method of Claim 18, wherein the constant temperature range of the solution is from about 15 degrees centigrade to about 60 degrees centigrade.

Claim 21 (new): The method of claim 18, wherein the photomask includes a transparent substrate.

Claim 22 (new): The method of claim 18, wherein the photomask includes a fused quartz substrate.